

Saskatchewan  
Ministry of  
Agriculture

# Crop Protection Laboratory Update

By Philip Northover, AAg, Supervisor, Crop Protection Laboratory

Four words, "herbicide injury" and "root rots", basically summarize the disease/disorder story at the Crop Protection Lab in the past two weeks.



Figure 1: *Fusarium* root rot on pea.  
Source: Saskatchewan Agriculture

While submissions increased markedly in mid- to late-July, they have slowed, with the exception of Dutch Elm Disease samples. This is not unexpected with the onset of warmer and sunnier weather over much of the province. Root rots have started to make an appearance, as the high temperatures placed considerable stress on plants in recent weeks. Poorly developed root systems have led to some dramatic symptoms.

In the past two weeks barley, lentils and wheat have been frequent visitors to the laboratory. The list below is what has been identified in the past two weeks. Most of the diseases/disorders below were diagnosed multiple times.

## **Field Crop Diseases/Disorders:**

**Barley:** *Fusarium* root rot, common root rot, herbicide injury.

**Canaryseed:** herbicide damage.

**Canola:** herbicide damage, *Phoma* leaf spot (blackleg).

**Durum:** physiological leaf spot (chloride deficiency), common root rot.

**Flax:** herbicide damage.

**Lentils:** *Fusarium* root rot, herbicide damage, stemphylium blight, poor root development (excess moisture).

**Peas:** *Fusarium* root rot.

**Sunflower:** *Fusarium* basal rot.

**Wheat:** common root rot and *Bipolaris* leaf spot, *Stagonospora* leaf spot, nutrient deficiencies, herbicide injury.



Figure 2: Glyphosate damaged wheat.  
Source: Saskatchewan Agriculture

(Continued on page 3)

**Crop Protection Laboratory Update**  
(Continued from page 2)

**Tree Diseases/Disorders:**

**Green Ash:** environmental damage (salt and/or drought), ash plant bug damage.

**American Elm:** Dutch elm disease samples have started to increase in frequency at the lab since the last report, 22 have been diagnosed in the past week, 15 with the disease.

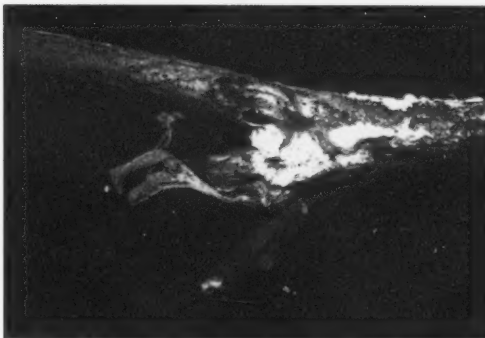


Figure 3: White mould on eggplant vine.  
Source: Saskatchewan Agriculture

**Horticulture Diseases/Disorders:**

**Potato:** blackleg.

**Tomato:** *Erwinia* soft rot and our first sample of late blight (*Phytophthora infestans*) on tomato for 2011.

**Cucumber:** grey mould (*Botrytis cinerea*).

**Eggplant:** white mould (*Sclerotinia sclerotiorum*).

Plant and insect submissions have begun to slow down after a very busy start to the season, but the unusually wet weather has produced some unusual finds.

**Weeds:**

**Tall hedge mustard** (*Sisymbrium* spp).

**Thyme leaved dragonhead** (*Dracocephalum thymiflorum*).

**Horseweed** (*Conyza canadensis*).

**Canadian milk vetch** (*Astragalus canadensis*).

**Insects:**

**Yellow headed Spruce Sawfly** (*Pinkonema alaskensis*).

**Hover fly larva** (*Syrphidae* family).

That is the latest from the Crop Protection Laboratory. ☼



For information about submitting samples to  
Saskatchewan Agriculture's Crop Protection  
Lab go to:

[www.agriculture.gov.sk.ca/Crop\\_Protection\\_Lab](http://www.agriculture.gov.sk.ca/Crop_Protection_Lab);  
or phone (306) 787-8130.

# Agriculture Knowledge Centre Update

By Brent Flaten, PAg, Integrated Pest Management Specialist

Inquiries during the past couple of weeks have covered a wide variety of topics, including weed, disease and insect control. Harvest-related questions on the use of Reglone<sup>TM</sup> versus pre-harvest glyphosate on crops have picked up. Producers have also been inquiring about seeding winter wheat or fall rye, especially on unseeded acres, due to flooding earlier this summer.

Very large weeds are an issue on unseeded acres that have been too wet to seed. Although these weeds use up some of the excess moisture, they can also produce a lot of unwanted seed if left to grow to maturity. Most large annual weeds can be controlled by high rates of glyphosate; however, some of the perennial broadleaf weeds may be difficult to control even at these high rates. For more information on specific weeds, contact your local regional crop specialist, the Agriculture Knowledge Centre at 1-866-457-2377, or Clark Brenzil, our provincial weed specialist.

Producers and private agronomists continue to send in pictures of various weeds or diseases for identification. In some cases, if the pictures are clear and include both wider angle and close up shots, we can identify them. However, the most precise way to have unknown weeds identified is to send them to the Crop Protection Lab at 346 McDonald Street, Regina, SK, S4N 6P6. There is a nominal fee of \$10 for this service. You can download or fill out and email a form directly from our website at: [www.agriculture.gov.sk.ca/Default.aspx?DN=b993e4cf-60d3-4a6c-b805-63d8517e6554](http://www.agriculture.gov.sk.ca/Default.aspx?DN=b993e4cf-60d3-4a6c-b805-63d8517e6554)

We are still receiving inquiries on leaf diseases in cereals. Unless the crop was seeded extremely late, crop staging is now beyond the fungicide window. Producers and agronomists should note that fungicides have pre-harvest intervals, often about 30 days. We have received numerous calls of leaf scorching with no evidence of fungal disease. Leaves are yellowing up from the leaf tip downwards and along the leaf edges moving inwards. If there is no fungal disease present, a fungicide application will not be beneficial. Potential non-fungal causes of the leaf burning could be the heat combined with poor root development, pesticide surfactant scorching or nutrient deficiencies such as chloride.

Insect inquiries have included aphids, wheat midge, diamondback moth larvae, imported cabbage worm and bertha armyworm. Aphids have been showing up in peas, lentils and canaryseed. Although spraying aphids was warranted in fields above the economic threshold this season, most peas and lentils are now beyond the susceptible stage. Diamondback larvae numbers have generally been below economical thresholds. In some cases, the imported cabbage worm is being mistaken for diamondback larvae. Imported cabbage worms have two side stripes and another stripe down the middle of the back, have a velvety appearance and generally don't cause sufficient crop damage in canola to warrant spraying an insecticide. There are some hot spots where bertha armyworm larvae are starting to show up in numbers above the economic threshold.

(Continued on page 5)



**Agriculture Knowledge Centre Update**  
(Continued from page 4)

We have also been receiving questions about the use of glyphosate pre-harvest versus Reglone™ for crop desiccation. Glyphosate is not a desiccant because it results in slow dry down of plants. The driver for deciding to use glyphosate pre-harvest should be perennial weed control rather than crop desiccation. A special note: some Monsanto Roundup products have been registered for pre-harvest applications in all types of mustard. Make sure you check with mustard buyers to see if they permit that particular use. As with malt barley and milling oats, just because pre-harvest glyphosate is registered on a crop, doesn't mean the buyers approve the use.

Regarding seeding winter wheat, we are cautioning producers to avoid a green bridge between immature spring wheat that is still green and green winter wheat seedlings. When this green bridge occurs, there is higher risk of a disease called wheat streak mosaic being transferred from the spring wheat to winter wheat by mites. There may also be an increased risk of stripe rust spreading if there are still yellow (not black) rust spores present on green spring wheat crops that could spread to green winter wheat seedlings. To lessen the risk of these diseases, there should be at least a two week break between spring wheat ripening and seeding winter wheat.

Soils-related questions include fertilizer formulation plans for next year (eg. slow release ESN) and soil survey information on potential land purchases.

Forage inquiries have primarily been on termination of perennial forages. ☉

**Agriculture Knowledge Centre**

Hours: 8 a.m. to 5 p.m. Monday to Friday  
Phone: 1-866-457-2377

**Got a question?**

E-mail: [aginfo@gov.sk.ca](mailto:aginfo@gov.sk.ca)

**Want to submit your question online?**

Go to our [http://www.agriculture.gov.sk.ca/ask\\_saskatchewan\\_agriculture](http://www.agriculture.gov.sk.ca/ask_saskatchewan_agriculture_form_page) form page.

# Stemphylium Blight in 2011

By Faye Dokken-Bouchard, PAg, Provincial Specialist, Plant Disease

Reports of stemphylium blight on lentil have started coming in over the last couple of weeks. The disease seemed to like the moist conditions experienced by many lentil crops in 2010 and was often accompanied by sclerotinia white mould and botrytis grey mould last year. Warm, humid conditions are also conducive for this disease and recent weather in the province has likely facilitated stemphylium blight development. It is generally believed that stemphylium blight is on the rise in Saskatchewan, and this has warranted further research to determine the extent of the potential problem and what can be done about it. The following is a summary of what we know so far.



Figure 4: Stemphylium blight on lentil near Yellow Grass, 2009.  
Source: Saskatchewan Agriculture

## Disease Diagnosis

On lentil, stemphylium blight initially appears as small, light beige lesions on the leaves/leaflets. While the disease is most readily apparent when blighted leaves appear at the top of the canopy, it will also be present under the canopy. The fungus is often present in the crop from the early seedling stage. Lesions tend to spread across the leaflets from one side to the other, killing entire leaflets and branches.

Prolonged moist periods promote further infections and give the upper canopy a grey-brown appearance. As is common in other lentil diseases, infected leaflets fall to the ground, serving as a source of spores for future infections of a wide range of plants. When examined through a magnifying glass or microscope, older lesions will appear dark brown and fuzzy (due to fungal spore production), and leaves will be twisted and rolled, as they have been desiccated by the pathogen (Figure 4).

*Stemphylium* spp. are common saprophytes, but, under the right conditions and in the presence of a susceptible host, these species behave as pathogens on a wide range of crops. Sometimes *Stemphylium* spp. will exploit a predisposing factor, such as frost, heat or chemical damage, or even another pathogen that caused damage initially. However, in Bangladesh and Nepal, where stemphylium blight is a major problem on lentil, heat and humidity in late summer when there is a lot of vegetative growth are considered the major factors for disease. *Stemphylium botryosum* is generally considered to be the culprit in lentil infections; however, little is known about the host specialization.

(Continued on page 7)

## Stemphylium Blight in 2011 (Continued from page 6)

### Disease Impact and Management

In 2007, stemphylium blight was relatively severe and widespread after a dry-but-relatively-humid growing season. However, in 2008, the disease was observed in less than a quarter of the lentil crops surveyed in Saskatchewan, with trace average incidence overall (see the Canadian Plant Disease Survey at [www.cps-scp.ca/cpds.shtml](http://www.cps-scp.ca/cpds.shtml)). Isolated incidences of the disease were identified through Crop Protection Laboratory submissions and other inquiries in 2008.

In 2009 and 2010, the Crop Protection Laboratory identified stemphylium blight on several lentil submissions, while Ministry agrologists and the Agriculture Knowledge Centre received numerous calls regarding the disease. *Stemphylium* sightings have already been reported in 2011.



Figure 5: Diseased lentils near Davidson, 2009.  
Source: Saskatchewan Agriculture

As growers become more aware of stemphylium blight, it is more likely to be recognized, but we still don't know if the disease is causing significant yield losses or simply occurring at a time when leaf-drop encourages the crop to dry down and expedite harvest. While the fungus may be damaging the plant, it can be difficult to provide definitive answers to the common questions, "why did this happen and what should I do?"

As with other plant diseases, temperature and moisture are critical factors in

stemphylium blight infection and development. Preliminary research at the University of Saskatchewan has shed some light on the epidemiology of the disease in this climate. The pathogen, *S. botryosum*, prefers high temperatures (above 25C), and a minimum of eight hours of leaf wetness for optimal disease development on lentil; however, it can remain infectious even if the wet conditions are interrupted by six to 24-hour dry periods. High relative humidity (~85 per cent) is also favourable for development of this disease.

Infection may lead to stained seed, reduced seed size and low germination rates, and the pathogen is routinely isolated in seed testing laboratories. However, the significance of seed transmission of stemphylium blight in Saskatchewan is unknown. At this time, there are no fungicides registered for control of stemphylium blight on lentil. While the value of crop rotation should never be downplayed, its effect is limited because *Stemphylium* spp. can survive in the absence of a host. Generally, when crop residue has been buried or broken down, inoculum levels will be reduced. ☼

# 2011 Plant Disease Surveys

By Sean Miller, PAg, Provincial Specialist, Integrated Pest Management  
Agrologist

Saskatchewan Ministry of Agriculture's disease surveys are an important component of integrated disease management plans. The disease surveys give producers notice of potential disease problems in their region and provide an incentive to take the necessary monitoring, preventative and control measures in the following year.

## Cereal Disease Surveys

The **Fusarium Head Blight Survey** monitors the severity and spread of fusarium head blight, as well as the *Fusarium* species responsible for infection. The information collected from the survey can also be used to provide disease control recommendations for producers. Surveyors collect cereal heads when crops are in the early milk to early dough stages. The samples are sent to the Ministry Crop Protection Laboratory for species identification and disease severity ratings.

The **Cereal Leaf Disease Survey** determines the prevalence and distribution of cereal leaf diseases, and is conducted at the same time as the Fusarium Head Blight Survey. The survey also identifies the most prominent pathogens in each region. Surveyors collect samples of flag leaves from fields within their region. The samples are sent to Agriculture and Agri-Food Canada laboratories for pathogen identification and severity ratings.

## Lentil Disease Survey

The Lentil Disease Survey is conducted in early August. Disease assessments are made in-crop by observing several representative plants to determine the general health and presence or absence of disease symptoms. Prevalence and severity of the following diseases is recorded: root rot, anthracnose, ascochyta blight, sclerotinia stem and pod rot, botrytis stem and pod rot, stemphylium blight and other less common diseases that may be present.

## Canola Disease Survey

The Canola Disease Survey is conducted from mid- to late-August by volunteer pathologists, agronomists and Saskatchewan Ministry of Agriculture staff. Canola is assessed visually for diseases such as sclerotinia stem rot, blackleg, alternaria black spot, fusarium wilt and aster yellows. Disease incidence is recorded in the field. With permission from producers involved in the survey, soil samples are also collected for clubroot DNA testing from approximately 100 fields.

Results of the 2011 disease surveys will be available to growers, and will be posted in the winter on the Canadian Plant Disease Survey website at: [www.cps-scp.ca/cpds.shtml](http://www.cps-scp.ca/cpds.shtml).

Past surveys are also available at the survey website or by contacting

[sean.miller@gov.sk.ca](mailto:sean.miller@gov.sk.ca) ☎



# Insect Update and Pre-Harvest Intervals

By Scott Hartley, PAg, Provincial Specialist, Insect and Vertebrate Pests

Aphids continue to be a concern for producers. There have been reports of aphids on pea, lentil, canaryseed and cereal crops. However, with crops maturing the susceptibility to aphid damage is decreasing. Plant sap has to be actively flowing, filling seeds, for the aphids to have an effect on yield. For all crops, by the time the seeds are nearing a late milky stage, there is no value to insecticide application.

In conjunction with aphid infestations, significant populations of aphid predators or parasites have also been observed. These may include lady beetle larvae and adults, green lacewings and hover fly (Family *Syrphidae*) larvae (see Figure 6).

Spraying for diamondback moth larvae has been reported in several areas in the province. Although the larvae are present in many fields the levels of infestations vary, emphasizing the importance of individual field monitoring. Plant damage may also vary in severity.

Both aphids and diamondback moth larvae can be negatively affected by heavy rain, and therefore beneficial in reducing these insect populations. Scout following heavy rains to properly assess whether control measures are still needed.

Bertha armyworm moth counts are noticeably higher in the west-central and northwestern regions. East of Rosetown, a trap count has exceeded 900 moths accumulated since late June. This data is an indicator of potential problems, but follow-up in-field monitoring for bertha armyworm larvae is important in determining actual densities and threat to the canola.



Figure 6: *Syrphidae* larva  
Source: Saskatchewan Agriculture

**Pre-harvest Intervals for Pesticide Application: Insecticides, Fungicides, Herbicides**  
Pre-harvest interval (PHI) refers to the number of days that the crop should **NOT** be harvested after application of a pesticide. Harvest in this context means cutting or swathing. If the crop is harvested before the indicated interval has elapsed, there could be unsafe or unacceptable residues of the pesticide remaining in or on the harvested seeds. Excess residue can affect commodities destined for export. PHIs are listed on product labels and are also included in Saskatchewan Agriculture's *Guide to Crop Protection* under the 'Restrictions' section of individual product descriptions. Ensure that the product is registered for the intended use for the crop at the time and stage of application.



# When to Harvest your Lentil Crop

By Dale Risula, PAg, Provincial Specialist, Special Crops

Maturity is measured from seeding time to swathing ripeness. Environment and management both play parts in influencing this time period; however, general guidelines are available for various crops including lentils.

In a project sponsored by industry and government, varieties of crops are tested in various agro-climatic conditions to provide information to growers about their relative performance. These regional trials are conducted throughout the province each year. Information on regional production suitability of the newest grain crop varieties is generated. In 2010, 36 entries for lentils were evaluated at various test sites across Saskatchewan. Eight market classes of lentil were evaluated and are ranked according to days to flower as opposed to maturity. Lentil plants have an indeterminate growth habit, so they will continue to flower until there is some form of stress, such as lack of moisture, nutrient deficiency or high temperature. The lentils in this evaluation flowered between 47 to 54 days. The maturity ratings are: early, medium, late and very late, or some combination of these. This provides a good comparison for growers to use when selecting lentils suitable for their areas.

Lentil crops are considered mature when about 30 per cent of the lowermost pods are tan-coloured and their seeds rattle in the pods. Either swathing or pre-harvest glyphosate application may begin at this time. Lentil swaths are prone to wind damage, but shattering losses may be reduced by swathing under conditions of higher humidity. A registered desiccant can be used to burn off crop foliage and weeds. It can reduce the time from maturity to harvest as well as some harvesting problems. A desiccant does not speed maturity of the crop, so treatment is made at the same time as swathing would occur. A pre-harvest application of glyphosate is registered in lentil for control of perennial weeds. It may provide some dry-down effect if weather conditions are warm and dry, and will kill the weeds over time. Do not apply glyphosate to crops grown for seed, as it may cause uneven germination and abnormal seedling development.

The Saskatchewan Pulse Growers (SPG) advises growers to avoid glyphosate as a pre-harvest treatment on 2011 lentil crops. The reason is to avoid market access issues associated with the European Union's (EU) maximum residue limit (MRL) of 0.1 parts per million (ppm) for glyphosate in lentils. Contact your buyer to discuss this issue before considering your harvest plans.

## Web links:

[www.agriculture.gov.sk.ca/Default.aspx?DN=9d4a928f-f7f2-45c9-87af-92fb97b9c567](http://www.agriculture.gov.sk.ca/Default.aspx?DN=9d4a928f-f7f2-45c9-87af-92fb97b9c567)

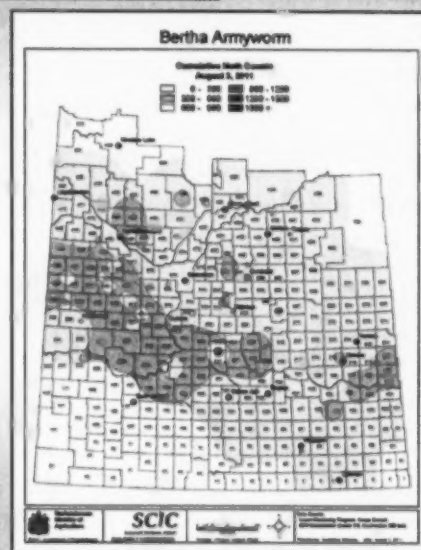
[www.saskpulse.com/media/pdfs/Glyphosate\\_Warning\\_2.pdf](http://www.saskpulse.com/media/pdfs/Glyphosate_Warning_2.pdf)

[www.agriculture.gov.sk.ca/Default.aspx?DN=c5993bcc-009f-4031-b936-c52c992b9e7d](http://www.agriculture.gov.sk.ca/Default.aspx?DN=c5993bcc-009f-4031-b936-c52c992b9e7d)



## Bertha Armyworm Map

→ The latest *Bertha Armyworm Map* can be found on the Saskatchewan Agriculture Website at: [www.agriculture.gov.sk.ca/maps\\_section](http://www.agriculture.gov.sk.ca/maps_section) (then scroll down to *Bertha Armyworm Map*).



The *Crop Production News* is a publication of the Crops Branch, Saskatchewan Ministry of Agriculture.

Editor: Faye Dokken-Bouchard;

Phone: (306) 787-4671;

e-mail: [faye.dokkenbouchard@gov.sk.ca](mailto:faye.dokkenbouchard@gov.sk.ca)